

Claims

- [c1] An affinity microcolumn comprising a high surface area material comprising a phase separable crystal, which has high flow properties and a low dead volume, contained within a housing and affinity reagents bound to the surface of the high surface area material, wherein the affinity reagents are either activated or activatable and the high surface area is formed by thermal surface phase separation of the crystal and leaching one of the separated soluble phases to result in a pore formation.
- [c2] The affinity microcolumn according to claim 1 wherein the affinity reagents that are bound to the surface of the high surface material further comprise affinity receptors bound to the affinity reagents.
- [c3] The affinity microcolumn according to claim 2 further comprising a tethering molecule that is activated or activatable and binds the affinity receptors to the affinity reagents.
- [c4] The affinity microcolumn of claim 1 wherein the housing is at least one of a micropipette or a manifold having more than one dimension.

- [c5] The affinity microcolumn according to claim 1 further comprising an amplification media that is activated or activatable and is interposed between the affinity reagents and the affinity receptors, where the amplification media allows a high density of affinity receptors to be bound to the affinity reagents than in the absence of the amplification media.
- [c6] The affinity microcolumn according to claim 2 further comprising an amplification media interposed between the affinity reagents and the affinity receptors, where the amplification media allows better access by an analyte to the affinity receptors than in the absence of the amplification media.
- [c7] The affinity microcolumn according to claim 5 wherein the amplification media comprises at least one of a biological polymer, a non-biological organic polymer, and an inorganic polymer.
- [c8] The affinity microcolumn according to claim 6 wherein the amplification media comprises at least one of a biological polymer, a non-biological polymer, and an inorganic polymer.
- [c9] The affinity microcolumn according to claim 1 wherein the high surface area material comprises porous crystal.

[c10] The affinity microcolumn according to claim 9 wherein the porous crystal comprises a porous crystal molecular trap that is formed by molding.